

Release notes for ENDF/B Development n-088_Ra_223
evaluation

ENDF
B-VII.dev

April 26, 2017

- checkr Warnings:

1. A previous error halted parsing of the current section
MAT=8825, MF= 1, MT=451 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=8825, MF= 1, MT=451
SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER    118 TO    169
```

- checkr Errors:

1. A variable is outside the allowed ENDF range
MAT=8825, MF= 1, MT=451 (0): Variable range

```
ERROR(S) FOUND IN MAT=8825, MF= 1, MT=451
MOD =      1 OUT OF RANGE      0 -      0      RECORD NUMBER    118
```

2. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 1, MT=452 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=8825, MF= 1, MT=452
SECTION 1/452 NOT IN DIRECTORY      RECORD NUMBER    170
```

3. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 2, MT=151 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=8825, MF= 2, MT=151
SECTION 2/151 NOT IN DIRECTORY      RECORD NUMBER    175
```

4. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 1 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 1
SECTION 3/ 1 NOT IN DIRECTORY      RECORD NUMBER    181
```

5. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 2 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 2
SECTION 3/ 2 NOT IN DIRECTORY      RECORD NUMBER    207
```

6. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 4 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 4
SECTION 3/ 4 NOT IN DIRECTORY      RECORD NUMBER    228
```

7. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 16 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 16
SECTION 3/ 16 NOT IN DIRECTORY RECORD NUMBER 246

8. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 17 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 17
SECTION 3/ 17 NOT IN DIRECTORY RECORD NUMBER 255

9. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 18 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 18
SECTION 3/ 18 NOT IN DIRECTORY RECORD NUMBER 262

10. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 37 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 37
SECTION 3/ 37 NOT IN DIRECTORY RECORD NUMBER 277

11. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 51 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 51
SECTION 3/ 51 NOT IN DIRECTORY RECORD NUMBER 282

12. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 52 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 52
SECTION 3/ 52 NOT IN DIRECTORY RECORD NUMBER 300

13. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 53 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 53
SECTION 3/ 53 NOT IN DIRECTORY RECORD NUMBER 317

14. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 54 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 54
SECTION 3/ 54 NOT IN DIRECTORY RECORD NUMBER 334

15. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 55 (0): Directory (b)

- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 55 | RECORD NUMBER | 350 |
| SECTION 3/ 55 NOT IN DIRECTORY | | |
16. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 56 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 56 | RECORD NUMBER | 366 |
| SECTION 3/ 56 NOT IN DIRECTORY | | |
17. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 57 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 57 | RECORD NUMBER | 381 |
| SECTION 3/ 57 NOT IN DIRECTORY | | |
18. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 58 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 58 | RECORD NUMBER | 396 |
| SECTION 3/ 58 NOT IN DIRECTORY | | |
19. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 59 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 59 | RECORD NUMBER | 410 |
| SECTION 3/ 59 NOT IN DIRECTORY | | |
20. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 60 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 60 | RECORD NUMBER | 424 |
| SECTION 3/ 60 NOT IN DIRECTORY | | |
21. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 61 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 61 | RECORD NUMBER | 438 |
| SECTION 3/ 61 NOT IN DIRECTORY | | |
22. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 62 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 62 | RECORD NUMBER | 451 |
| SECTION 3/ 62 NOT IN DIRECTORY | | |
23. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 63 (0): Directory (b)

- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 63 | | |
| | SECTION 3/ 63 NOT IN DIRECTORY | RECORD NUMBER | 464 |
24. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 64 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 64 | | |
| | SECTION 3/ 64 NOT IN DIRECTORY | RECORD NUMBER | 477 |
25. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT= 91 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=8825, MF= 3, MT= 91 | | |
| | SECTION 3/ 91 NOT IN DIRECTORY | RECORD NUMBER | 489 |
26. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 3, MT=102 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=8825, MF= 3, MT=102 | | |
| | SECTION 3/102 NOT IN DIRECTORY | RECORD NUMBER | 501 |
27. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 2 (0): Directory (b)
- | | | | |
|--|--|---------------|-----|
| | ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 2 | | |
| | SECTION 4/ 2 NOT IN DIRECTORY | RECORD NUMBER | 523 |
28. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 16 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 16 | | |
| | SECTION 4/ 16 NOT IN DIRECTORY | RECORD NUMBER | 683 |
29. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 17 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 17 | | |
| | SECTION 4/ 17 NOT IN DIRECTORY | RECORD NUMBER | 694 |
30. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 18 (0): Directory (b)
- | | | | |
|--|---|---------------|-----|
| | ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 18 | | |
| | SECTION 4/ 18 NOT IN DIRECTORY | RECORD NUMBER | 705 |
31. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 37 (0): Directory (b)

- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 37 | RECORD NUMBER | 716 |
| SECTION 4/ 37 NOT IN DIRECTORY | | |
32. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 51 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 51 | RECORD NUMBER | 727 |
| SECTION 4/ 51 NOT IN DIRECTORY | | |
33. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 52 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 52 | RECORD NUMBER | 752 |
| SECTION 4/ 52 NOT IN DIRECTORY | | |
34. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 53 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 53 | RECORD NUMBER | 777 |
| SECTION 4/ 53 NOT IN DIRECTORY | | |
35. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 54 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 54 | RECORD NUMBER | 802 |
| SECTION 4/ 54 NOT IN DIRECTORY | | |
36. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 55 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 55 | RECORD NUMBER | 827 |
| SECTION 4/ 55 NOT IN DIRECTORY | | |
37. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 56 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 56 | RECORD NUMBER | 852 |
| SECTION 4/ 56 NOT IN DIRECTORY | | |
38. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 57 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 57 | RECORD NUMBER | 877 |
| SECTION 4/ 57 NOT IN DIRECTORY | | |
39. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 58 (0): Directory (b)

- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 58 | RECORD NUMBER | 902 |
| SECTION 4/ 58 NOT IN DIRECTORY | | |
40. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 59 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 59 | RECORD NUMBER | 927 |
| SECTION 4/ 59 NOT IN DIRECTORY | | |
41. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 60 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 60 | RECORD NUMBER | 952 |
| SECTION 4/ 60 NOT IN DIRECTORY | | |
42. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 61 (0): Directory (b)
- | | | |
|---|---------------|-----|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 61 | RECORD NUMBER | 977 |
| SECTION 4/ 61 NOT IN DIRECTORY | | |
43. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 62 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 62 | RECORD NUMBER | 1002 |
| SECTION 4/ 62 NOT IN DIRECTORY | | |
44. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 63 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 63 | RECORD NUMBER | 1027 |
| SECTION 4/ 63 NOT IN DIRECTORY | | |
45. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 64 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 64 | RECORD NUMBER | 1052 |
| SECTION 4/ 64 NOT IN DIRECTORY | | |
46. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 4, MT= 91 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8825, MF= 4, MT= 91 | RECORD NUMBER | 1077 |
| SECTION 4/ 91 NOT IN DIRECTORY | | |
47. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 5, MT= 16 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 5, MT= 16
SECTION 5/ 16 NOT IN DIRECTORY RECORD NUMBER 1103

48. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 5, MT= 17 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 5, MT= 17
SECTION 5/ 17 NOT IN DIRECTORY RECORD NUMBER 1121

49. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 5, MT= 18 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 5, MT= 18
SECTION 5/ 18 NOT IN DIRECTORY RECORD NUMBER 1144

50. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 5, MT= 37 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 5, MT= 37
SECTION 5/ 37 NOT IN DIRECTORY RECORD NUMBER 1152

51. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8825, MF= 5, MT= 91 (0): Directory (b)

ERROR(S) FOUND IN MAT=8825, MF= 5, MT= 91
SECTION 5/ 91 NOT IN DIRECTORY RECORD NUMBER 1178

- fudge-4.0 Warnings:

1. Cross section does not match sum of linked reaction cross sections
crossSectionSum label 0: total (Error # 0): CS Sum.

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.96%

- fudge-4.0 Errors:

1. Found a negative probability
reaction label 0: n + Ra223 / Product: n / Distribution: / angularTwoBody - XYs2d: (Error # 0): Negative prob.

WARNING: Negative probabilities encountered. Incident energy: 2.e7 eV, worst case: -0.00357434126556

2. Calculated and tabulated Q values disagree.
reaction label 16: n[multiplicity:'2'] + Ra222 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -4844310.129455566 eV vs -5148890. eV!

3. Calculated and tabulated Q values disagree.
reaction label 17: n[multiplicity:'3'] + Ra221 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -11558261.8855896 eV vs -1.18656e7 eV!

4. Weights in a weighted sum don't sum up to one
reaction label 17: n[multiplicity:'3'] + Ra221 / Product: n / Distribution: / uncorrelated - energy - weightedFunctionals: (Error # 0): Bad weight sum

WARNING: Weights don't sum to 1.0!

5. Calculated and tabulated Q values disagree.
reaction label 18: n[multiplicity:'4'] + Ra220 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -16938535.86203003 eV vs -1.72433e7 eV!

6. Calculated and tabulated Q values disagree.
reaction label 20: Ra224 + gamma (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 6792416.959411621 eV vs 6500690. eV!

• njoy2012 Warnings:

1. Evaluation has no resonance parameters given
unresr...calculation of unresolved resonance cross sections (0): No RR

---message from unresr---mat 8825 has no resonance parameters
copy as is to nout

2. In some evaluations, the partial fission reactions MT=19, 20, 21, and 38 are given in File 3, but no corresponding distributions are given. In these cases, it is assumed that MT=18 should be used for the fission neutron distributions.
heatr...prompt kerma (0): HEATR/hinit (3)

---message from hinit---mt458 is missing for this mat

3. Evaluation has no resonance parameters given
purrr...probabalistic unresolved calculation (0): No RR

---message from purrr---mat 8825 has no resonance parameters
copy as is to nout

4. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
grouprr...compute self-shielded group-averaged cross-sections (0): GROUPR/conver (0)

---message from conver---cannot do complete particle production for mt= 16
only mf4/mf5 provided

5. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
grouprr...compute self-shielded group-averaged cross-sections (1): GROUPR/conver (0)

---message from conver---cannot do complete particle production for mt= 17
only mf4/mf5 provided

6. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (2): GROUPR/conver (0)

```
---message from conver---cannot do complete particle production for mt= 37
                        only mf4/mf5 provided
```

7. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (3): GROUPR/conver (0)

```
---message from conver---cannot do complete particle production for mt= 91
                        only mf4/mf5 provided
```

- njoy2012 Errors:

1. An angular distribution is negative
acer...monte carlo neutron and photon data (0): Neg. P(Ejμ) (b)

```
---message from ptleg2---negative probs found
                        14 for mt= 2 e= 2.000E+07
```

- acelst Warnings:

1. generic warning message
0: Warning

```
ACELST WARNING - More than one range for MF/MT          6          16
ACELST WARNING - More than one range for MF/MT          6          17
```

2. generic warning message
1: Warning

```
ACELST WARNING - More than one range for MF/MT          6          37
STOP ACELST Completed
```